

REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

New claim 7 has been added.

This amendment adds, changes and/or deletes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, claims 1-7 are now pending in this application.

Objection to the Drawings

The drawings are objected to for not showing a preformed filament. This objection is respectfully traversed. Claim 1 recites a steel cord comprising outer steel filaments, "said outer steel filaments being preformed in order to allow rubber penetration inside said cord." As discussed in the specification on page 4, line 27, to page 5, line 11, Figure 1 shows an exemplary embodiment of a steel cord 10 that includes an outer layer of outer steel filaments 18 that have been preformed. Therefore, Figure 1 shows an example of the claimed steel cord, comprising outer steel filaments that have been preformed. Withdrawal of this objection is respectfully requested.

Objection to the Specification

The specification is objected to for containing informalities. A new abstract is provided on a separate sheet and the specification has been amended to overcome the objections. The specification has also been amended to overcome the objections. Withdrawal of the objections is respectfully requested.

Rejection under 35 U.S.C. § 112

Claim 1 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. In particular, the Office argues that one of ordinary skill would not know what the units of measure for “0.1” are because it is unclear if “0.1” is a diameter. This rejection is respectfully traversed. Claim 1 has been amended to overcome this rejection.

Rejection under 35 U.S.C. § 102

Claims 1-6 are rejected under 35 U.S.C. § 102(b) as being anticipated by WO 99/31313. This rejection is respectfully traversed.

Amended claim 1 recites a steel cord adapted for the reinforcement of elastomers, said steel cord comprising: a core steel filament having a core steel filament diameter d_c and being coated with a polymer; six intermediate steel filaments having an intermediate steel filament diameter d_i smaller than or equal to said core steel filament diameter d_c , said intermediate steel filaments being twisted around said core steel filament; a number of N outer steel filaments having an outer steel filament diameter d_o smaller than or equal to said intermediate steel filament diameter d_i , said outer steel filaments being twisted around said intermediate steel filaments, said outer steel filaments being preformed in order to allow rubber penetration inside said cord, wherein said number of N is ten or eleven; said core steel filament, said intermediate steel filaments and said outer steel filaments all having a tensile strength of at least 2600 MPa, said cord having an outer diameter D according to following formula: $D \leq d_c + 2 \times d_i + 2 \times d_o + 0.1 \text{ mm}$; wherein all diameters (D , d_c , d_i , d_o) are expressed in millimeters (mm). Claims 2-6 depend upon claim 1.

According to a disclosed embodiment, a steel cord is provided that provides a balance between four requirements of a steel cord: (1) a high breaking load, (2) a high resistance against fatigue, (3) a high resistance against corrosion, and (4) a small cord diameter. As discussed in Applicants' disclosure, these four requirements are interdependent and must be considered as a whole when designing a steel cord. Applicants submit that the recited steel cord constitutes an integrated solution that achieves an advantageous combination of these four requirements for a steel cord.

WO 99/31313 discloses a steel cord 10 that includes a core filament 12, a layer of intermediate filaments 14 surrounding the core, and a layer of outer filaments 16 surrounding the intermediate layer. See WO 99/31313 at page 7, lines 2-8. WO 99/31313 discloses that the cord 10 can have a structure of one core filament, six intermediate filaments, and twelve outer filaments (a 1+6+12 structure); a structure of one core filament, seven intermediate filaments, and fourteen outer filaments (a 1+7+14 structure); or a structure of three core filaments, nine intermediate filaments, and one outer filament (a 3+9+1 structure). See WO 99/31313 at page 4, lines 30-31; page 5, lines 23-26; page 7, lines 2-6, 23-27; page 8, lines 4-6; page 9, lines 1-6, 23-30; page 11, lines 15-16.

However, WO 99/31313 does not disclose that the cord 10 includes a number of N outer steel filaments, “wherein said number of N is ten or eleven.” As discussed above, WO 99/31313 only discloses configurations that include twelve, fourteen, or one outer filament. Therefore, claim 1 recites a steel cord with a smaller number of steel filaments than WO 99/31313. Applicants submit that a steel cord design having a layer of ten or eleven outer filaments advantageously provides space between the outer filaments for proper rubber penetration. Applicants further submit that it would not have been obvious to simply decrease the number of outer steel filaments to obtain the claimed number of outer filaments because decreasing the number of outer filaments ordinarily decreases the breaking load for the entire steel cord. Applicants have advantageously overcome this problem by providing a steel cord with an outer layer of steel filaments with a combination of features. For example, the outer layer is a number N of steel filaments, wherein the outer steel filaments are preformed, said number of N is ten or eleven; and said outer steel filaments all having a tensile strength of at least 2600 MPa.

Nor does WO 99/31313 disclose outer steel filaments “being preformed in order to allow rubber penetration inside said cord.” WO 99/31313 does not disclose or suggest that outer layer filaments 16 are “preformed in order to allow rubber penetration inside said cord.” Furthermore, as shown in Figure 1 of WO 99/31313, there is no space between the outer filaments 16 to permit rubber penetration inside the steel cord 10 because the outer filaments 16 directly touch one another. Because the outer filaments of the claimed steel cord have been preformed there is a space between each pair of adjacent outer steel filaments that allows rubber penetration inside the steel cord. Furthermore, this arrangement

advantageously promotes that a load applied to the steel cord is evenly distributed to each steel filament.

WO 99/31313 does not disclose a steel cord “having an outer diameter D according to following formula: $D \leq d_c + 2 \times d_i + 2 \times d_o + 0.1 \text{ mm}$; wherein all diameters (D , d_c , d_i , d_o) are expressed in millimeters (mm).” WO 99/31313 does not disclose that the steel cord 10 has an outer diameter according to the recited formula.

WO 99/31313 does not disclose a steel cord comprising outer steel filaments, “said outer steel filaments all having a tensile strength of at least 2600 MPa.” The Office argues that the outer filaments 16 would inherently have the strength recited by claim 1. See Office Action at page 4. However, the Office must provide a rationale or evidence tending to show inherency. See M.P.E.P. § 2112, Part IV. Inherency may not be established by probabilities or possibilities. See M.P.E.P. § 2112, Part IV, *citing In re Robertson*, 49 USPQ2d 1949, 1950-51, (Fed. Cir. 1999). Furthermore, to rely upon inherency, the Office must provide a basis in fact and/or technical reasoning to reasonably support the determination that an allegedly inherent characteristic necessarily flows from the teachings of the prior art. See M.P.E.P. § 2112, Part IV, *citing Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990).

Applicants submit that the Office has not provided a basis in fact and/or technical reasoning to reasonably support a determination that the recited tensile strength necessarily flows from the teachings of WO 99/31313. The Office alleges that WO 99/31313 anticipates the recited tensile strength because this recited strength would be inherent of the steel disclosed by WO 99/31313. See Office Action at page 4. However, the Office has not provided any facts or evidence that the composition disclosed by WO 99/31313 would provide the tensile strength recited by claim 1. It appears that the Office is relying upon possibility or probability that the disclosed composition could have the recited tensile strength rather than establishing inherency through a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent tensile strength necessarily flows from the teachings of WO 99/31313.

Applicants submit that providing preformed outer steel filaments having a tensile strength of at least 2600 MPa compensates for the lower number of outer steel filaments (N of ten or eleven) in comparison to the prior art. As discussed above, providing a steel cord with a lower number of outer steel filaments is compensated for by providing preformed steel cords with a strength of at least 2600 MPa. Applicants submit that WO 99/31313 fails to disclose a steel cord having an outer layer of steel filaments with the features recited in claim 1.

For at least the reasons discussed above, WO 99/31313 fails to disclose all of the features of claim 1. Withdrawal of this rejection is respectfully requested.

New Claim

Claim 7 depends upon claim 1 and is allowable over WO 99/31313 for at least the reasons discussed above. Claim 7 further recites “wherein said intermediate steel filaments are twisted in an intermediate twist direction and said outer steel filaments are twisted in an outer twist direction, wherein said intermediate twist direction is different from the outer twist direction.” WO 99/31313 discloses that the outer layer of filaments 16 can be twisted around the intermediate filaments 14. See WO 99/31313 at page 4, lines 24-28. WO 99/31313 further discloses that all filaments can be twisted in the same direction. See WO 99/31313 at page 7, lines 23-32; page 8, lines 1-2. Therefore, WO 99/31313 fails to disclose or suggest all of the features of new claim 7.

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to

charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date 1/18/07

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